Date: Sun, 28 Nov 93 04:30:29 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@UCSD.Edu
Reply-To: Ham-Space@UCSD.Edu
Precedence: Bulk
Subject: Ham-Space Digest V93 #93
To: Ham-Space

Ham-Space Digest Sun, 28 Nov 93 Volume 93 : Issue 93

Today's Topics:
APT-Satellites: Report NOV 21, 1993
Two-Line Orbital Element Set Format

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-space".

Date: Mon, 22 Nov 1993 08:16:23 GMT
From: dog.ee.lbl.gov!agate!howland.reston.ans.net!xlink.net!gmd.de!
peter.henne%gmd.de@network.ucsd.edu
Subject: APT-Satellites: Report NOV 21, 1993
To: ham-space@ucsd.edu

Observed at station 50.7 NLat, 7.1 ELon, NOV 21, 1993

NOAA-9: APT 137.62 On
NOAA-10: APT 137.50 On
NOAA-11: APT 137.62 On
NOAA-12: APT 137.50 On
Meteor 2-21: APT 137.85 On
Meteor 3-3: APT 137.30 On

NOAA-9, 11 and 12 transmit ch.2 and ch.4 from daylight parts
of the orbit, ch.3 and ch.4 from night passes. NOAA-10 always
transmits ch.2 and ch.4, so ch.2 (vis) is black at night.
No changes for Meteor 2-21 (weak signal) and Meteor 3-3, both
transmit only vis from daylight.

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+--+

Date: Fri, 26 Nov 1993 16:05:27 MST
From: swrinde!cs.utexas.edu!howland.reston.ans.net!agate!library.ucla.edu!
news.mic.ucla.edu!unixg.ubc.ca!nntp.cs.ubc.ca!alberta!ugc!nebulus!ve6mgs!
usenet@network.ucsd.edu
Subject: Two-Line Orbital Element Set Format
To: ham-space@ucsd.edu

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.info on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (513) 427-0674, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (also updated daily) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

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Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNN
```

Line 0 is a eleven-character name.

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

Line 1

Column	Description
01-01	Line Number of Element Data
03-07	Satellite Number
10-11	International Designator (Last two digits of launch year)
12-14	International Designator (Launch number of the year)

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 15-17     International Designator (Piece of launch)
 19-20     Epoch Year (Last two digits of year)
 21-32     Epoch (Julian Day and fractional portion of the day)
 34-43     First Time Derivative of the Mean Motion
        or Ballistic Coefficient (Depending on ephemeris type)
 45-52     Second Time Derivative of Mean Motion (decimal point assumed;
           blank if N/A)
 54-61     BSTAR drag term if GP4 general perturbation theory was used.
           Otherwise, radiation pressure coefficient.  (Decimal point assumed)
 63-63     Ephemeris type
 65-68     Element number
 69-69     Check Sum (Modulo 10)
           (Letters, blanks, periods, plus signs = 0; minus signs = 1)

Line 2
Column     Description
 01-01     Line Number of Element Data
 03-07     Satellite Number
 09-16     Inclination [Degrees]
 18-25     Right Ascension of the Ascending Node [Degrees]
 27-33     Eccentricity (decimal point assumed)
 35-42     Argument of Perigee [Degrees]
 44-51     Mean Anomaly [Degrees]
 53-63     Mean Motion [Revs per day]
 64-68     Revolution number at epoch [Revs]
 69-69     Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U          86 50.28438588 0.00000140           67960-4 0  5293
2 11416  98.5105  69.3305 0012788  63.2828 296.9658 14.24899292346978
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Dr TS Kelso                          Assistant Professor of Space Operations
tkelso@afit.af.mil                   Air Force Institute of Technology

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End of Ham-Space Digest V93 #93
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